

Chapter 20 Electricity

Section 20.2 Electric Current and Ohm's Law

(pages 604–607)

This section discusses electric current, resistance, and voltage. It also uses Ohm's Law to explain how voltage, current, and resistance are related.

Reading Strategy (page 604)

Predicting Before you read, write a prediction of what electric current is in the table below. After you read, if your prediction was incorrect or incomplete, write what electric current actually is. For more information on this Reading Strategy, see the **Reading and Study Skills** in the **Skills and Reference Handbook** at the end of your textbook.

Electric Current	
Electric Current Probably Means	Electric Current Actually Means

Electric Current (page 604)

1. What is electric current? _____

2. Complete the following table about electric current.

Electric Current		
Type of Current	How Charge Flows	Examples
Direct		
Alternating	Two directions	

3. Electrons flow in the wire from a(n) _____ terminal to a(n) _____ terminal.

Conductors and Insulators (page 605)

4. What is an electrical conductor? _____

5. What is an electrical insulator? _____

6. Is the following sentence true or false? Metals are good conductors because they do not have freely moving electrons.

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Match each material to the category of a conductor or insulator.

Material	Category
_____ 7. Copper	a. conductor
_____ 8. Plastic	b. insulator
_____ 9. Rubber	
_____ 10. Silver	
_____ 11. Wood	

Resistance (page 605)

12. Explain why the current is reduced as electrons move through a conductor. _____

13. Circle the letter of each factor that affects a material's resistance.
a. its length b. its temperature
c. its velocity d. its thickness
14. What is a superconductor? _____

Voltage (page 606)

Match each term to its definition.

Definition	Term
_____ 15. A device that converts chemical energy to electrical energy	a. flow of charge
_____ 16. Requires a complete loop	b. voltage
_____ 17. The difference in electrical potential energy between two places in an electric field	c. battery

18. Is the following sentence true or false? Three common voltage sources are batteries, solar cells, and generators. _____

Ohm's Law (page 607)

19. Is the following sentence true or false? According to Ohm's law, the voltage in a circuit equals the product of the energy and the resistance. _____
20. Doubling the voltage in a circuit doubles the current if _____ is held constant.
21. Is the following sentence true or false? Doubling the resistance in a circuit will halve the current if voltage is held constant.
